

**Patent Claims**

1. Modular measuring device, comprising:

- 5    - a sensor module (5)  
     -- having a sensor compartment, in which a physical-to-electrical  
     sensor (7) is arranged; and  
     - an electronics module (13)  
     -- having an electronics compartment, in which a measuring device  
10   electronics is arranged; as well as  
     - a first connecting element (19) mounted on the electronics  
     module (13) and electrically connected with the measuring device  
     electronics (7), and a second connecting element (20) mounted on  
     the sensor module (5) and electrically connected with the sensor (7);  
15   - wherein sensor module (5) and electronics module (13) are  
     releasably, mechanically connected together, accompanied by the  
     formation of a connecting compartment (17) lying between sensor  
     compartment and electronics compartment, preferably a connecting  
     compartment sealed fluid-tightly, and/or pressure-tightly, relative to  
20   a surrounding atmosphere;  
     - wherein the two connecting elements (19, 20) are electrically,  
     preferably galvanically, connected together, so that the measuring  
     device electronics and sensor are electrically coupled together; and  
     - wherein the two connecting elements, connected together, are  
25   accommodated in the connecting compartment formed between  
     sensor compartment and electronics compartment.

2. Measuring device as claimed in claim 1, wherein at least one of  
the two connecting elements (19, 20) is movably mounted.

3. Measuring device as claimed in claim 1 or 2, wherein at least one side wall of at least one of the two connecting elements has at least one essentially straight groove (41) and at least one side wall of the connecting compartment has at least one, essentially straight projection (42) corresponding with the groove (41) of the connecting element, wherein the projection (42) of the connecting compartment is received by the groove (41) of the connecting element.

4. Measuring device as claimed in one of the preceding claims, wherein at least one side wall of at least one of the two connecting elements (19, 20) has at least one essentially straight projection and at least one side wall of the connecting compartment has an essentially straight groove corresponding with the projection of the connecting element, wherein the projection of the connecting element is received by the groove of the connecting compartment.

5. Measuring device as claimed in claim 3 or 4, wherein

- at least one of the two connecting elements has electrically conductive, plug elements directed essentially in parallel with one another, and
- the other of the two connecting elements has electrically conductive, socket elements directed essentially in parallel with one another and corresponding to the plug elements,
- wherein the plug elements are inserted into the socket elements and so contact the socket elements, that sensor (7) and measuring device electronics (7) are electrically connected together, and
- wherein plug elements and socket elements are directed essentially in parallel with the at least one groove of the connecting compartment and/or with the at least one projection of the connecting compartment.

6. Measuring device as claimed in the preceding claim, wherein both the plug elements and the socket elements protrude into the connecting compartment.

5 7. Measuring device as claimed in claim 5 or 6, wherein at least one of the plug elements and/or at least one of the socket elements is mounted laterally and/or rotatably movably within the connecting element of which it is a part.

10 8. Measuring device as claimed in one of the claims 3 to 7, wherein, for preventing an erroneous assembly of sensor module (5) and electronics module (13), the at least one projection of the connecting compartment and the connecting element groove corresponding with such are so arranged, that an installed position  
15 of the sensor module (5) relative to the electronics module (13) is uniquely determined.

9. Measuring device as claimed in one of the claims 3 to 8, wherein, for preventing an erroneous assembly of sensor module (5) and  
20 electronics module (13), the at least one groove of the connecting compartment and the connecting element projection corresponding with such are so arranged, that an installed position of the sensor module (5) relative to the electronics module (13) is uniquely determined.

25 10. Measuring device as claimed in one of the preceding claims, further comprising an essentially ring-shaped seal (33), which is so arranged in the connecting compartment, that it laterally surrounds at least one of the two connecting elements (19, 20) and contacts  
30 with an external side at least one side wall of the connecting compartment (17).

11. Measuring device as claimed in the preceding claim, wherein the seal (33) is arranged coaxially, especially concentrically, with the surrounded connecting element.

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12. Measuring device as claimed in claim 10 or 11, wherein the seal (33) is arranged within the connecting compartment in the region of a peripheral gap (34) in the side wall of the connecting compartment, and lying between connecting element and side wall of the connecting compartment (17).

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13. Measuring device as claimed in one of the claims 10 to 12, wherein the seal (33) has on its outside, contacting the side wall of the connecting compartment (17), two sealing lips (33A, 33B) extending essentially in parallel with one another.

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14. Measuring device as claimed in claim 12 and 13, wherein the seal (33) is so arranged in the connecting compartment (17) that the two sealing lips extend essentially in parallel with the gap (34) in the side wall of the connecting compartment (17).

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15. Measuring as claimed in the preceding claim, wherein the seal is so arranged in the connecting compartment that the gap (34) in the side wall of the connecting compartment extends essentially between the sealing lips of the seal.

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